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CORONARY CIRCULATORY DYSFUNCTION IS ASSOCIATED WITH DIASTOLIC DYSFUNCTION IN INDIVIDUALS AT CARDIOVASCULAR RISK

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Aim: We aimed to evaluate the relationship between coronary circulatory (dys)function and diastolic function in individuals with cardiovascular risk factors but normal left-ventricular function and without hemodynamically obstructive CAD.

Methods: Myocardial blood flow (MBF) at rest and during pharmacologically- induced hyperaemia was measured with N-13 ammonia PET in 31 individuals with traditional cardiovascular risk factors ("at RISK") and in 20 healthy controls (CON). In addition, gated-PET at rest determined globally systolic and diastolic function.

Results: Stress-rest PET perfusion imaging was normal in all study participants, ruling widely out flow-limiting obstructive CAD. MBF at rest did not differ significantly between CON and at RISK (0.78 ± 0.19 vs 0.99 ± 0.21 ml/g/min). When compared with CON, the hyperemic MBF and the MFR were significantly reduced in at RISK (2.16 ± 0.62 vs 1.67 ± 0.41 ml/g/min and 2.89± 0.92 vs 1.75± 0.54, $p<0.007$, respectively). Global LVEF was similar between both groups (60.7% vs 61.0 %), while time-to- peak filling rate (TTPF), as index of diastolic function, was significantly increased in at RISK as compared to CON (192.5± 53.2 vs 154.8± 16.2 msec, $p<0.001$). Finally, hyperemic MBFs and MFR correlated significantly and inversely with TTPF, respectively ($r=-0.42$ and $r=-0.44$; $p<0.003$), suggesting some direct adverse effects of coronary circulatory dysfunction on LV relaxation.

Conclusions: In individuals with cardiovascular risk factors, coronary circulatory dysfunction may be associated with diastolic abnormalities, suggesting a dysfunction of the coronary circulation to mediate adverse effects on the relaxation of the left-ventricle that deserves further studies.